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Maeda

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(54) **SEMICONDUCTOR DEVICE WITH SOLID STATE IMAGE PICKUP ELEMENT**

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(58) **Field of Search** 257/222, 225, 257/226, 431; 438/69, 70, 73, 369

(56) **References Cited**

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(57) **ABSTRACT**

An N-type impurity diffusion region is formed in an element forming region surrounded by a field insulating film. In a region between an end portion of the N-type impurity diffusion region and an end portion of the field oxide film, a P-type impurity diffusion region is formed so as to contain an interface level present portion under a bird's beak portion. Thus, a PN junction is formed in a position distant from the interface level present portion. Therefore, even if a voltage is applied to the PN junction, a depletion layer will not reach the interface level present portion. Consequently, a semiconductor device, which suppresses an occurrence of a leakage current along the lower surface of an element isolation insulating film caused by the interface level present portion undesirably included in the depletion layer, as well as a manufacturing method of the same can be obtained.

1 Claim, 10 Drawing Sheets